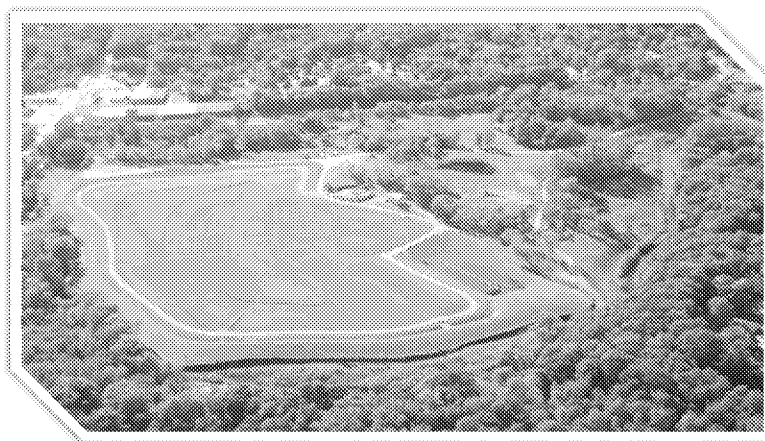




**Allied Paper/Portage Creek/Kalamazoo River  
Superfund Site Operable Unit 1  
Allied Landfill Proposed Plan**  
November 19, 2015



# Objectives



- Provide information on EPA's proposed remedy for Allied Landfill, Operable Unit 1
- Informal comments
- Formal public hearing for comments to be included in the record

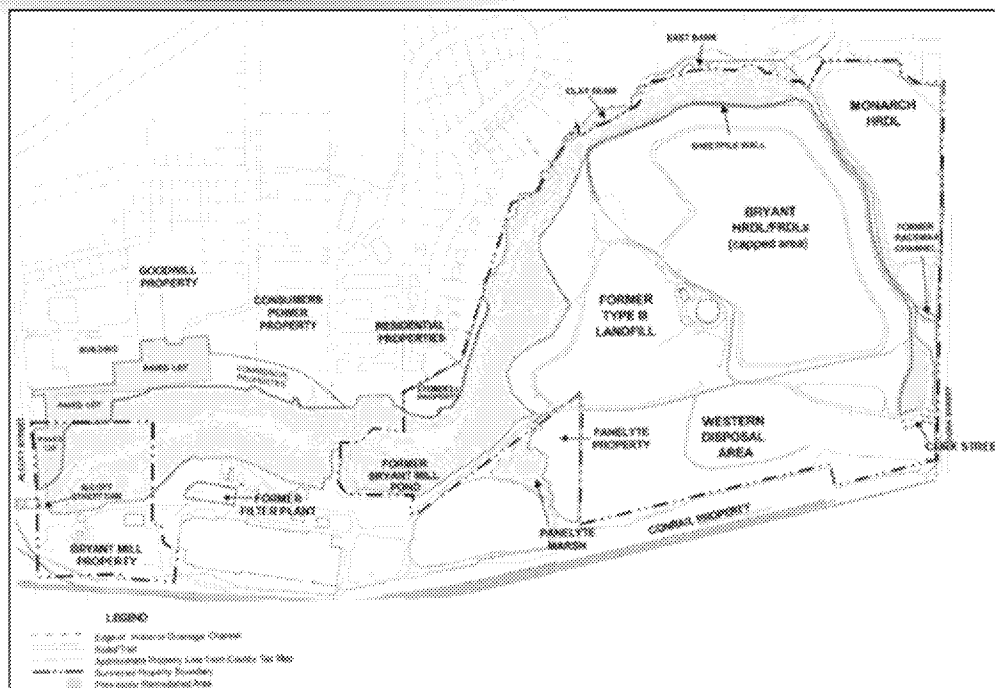
# Remedial Process



- EPA receives comments during 30-day period
- EPA responds to comments in the Responsiveness Summary
- EPA finalizes remedy in Record of Decision (winter 2016)



# Allied Landfill Sub-Areas



# Bryant Mill Pond TCRA



- Conducted June 1998 to May 1999
- Removed 150,000 cy bank and in-stream PCB contaminated sediment
- One of the largest sources of PCB contamination to Portage Creek and the Kalamazoo River
- Post excavation sampling PCB concentrations less than 1 ppm
- Fish tissue concentrations dropped an order of magnitude



\$7.5 M

# Interim Remedial Measures



- Conducted 2000-2002
- Installation of:
  - Sheetpile Wall
  - Partial Cap
  - Groundwater Collection/Treatment System
- Additional Excavation



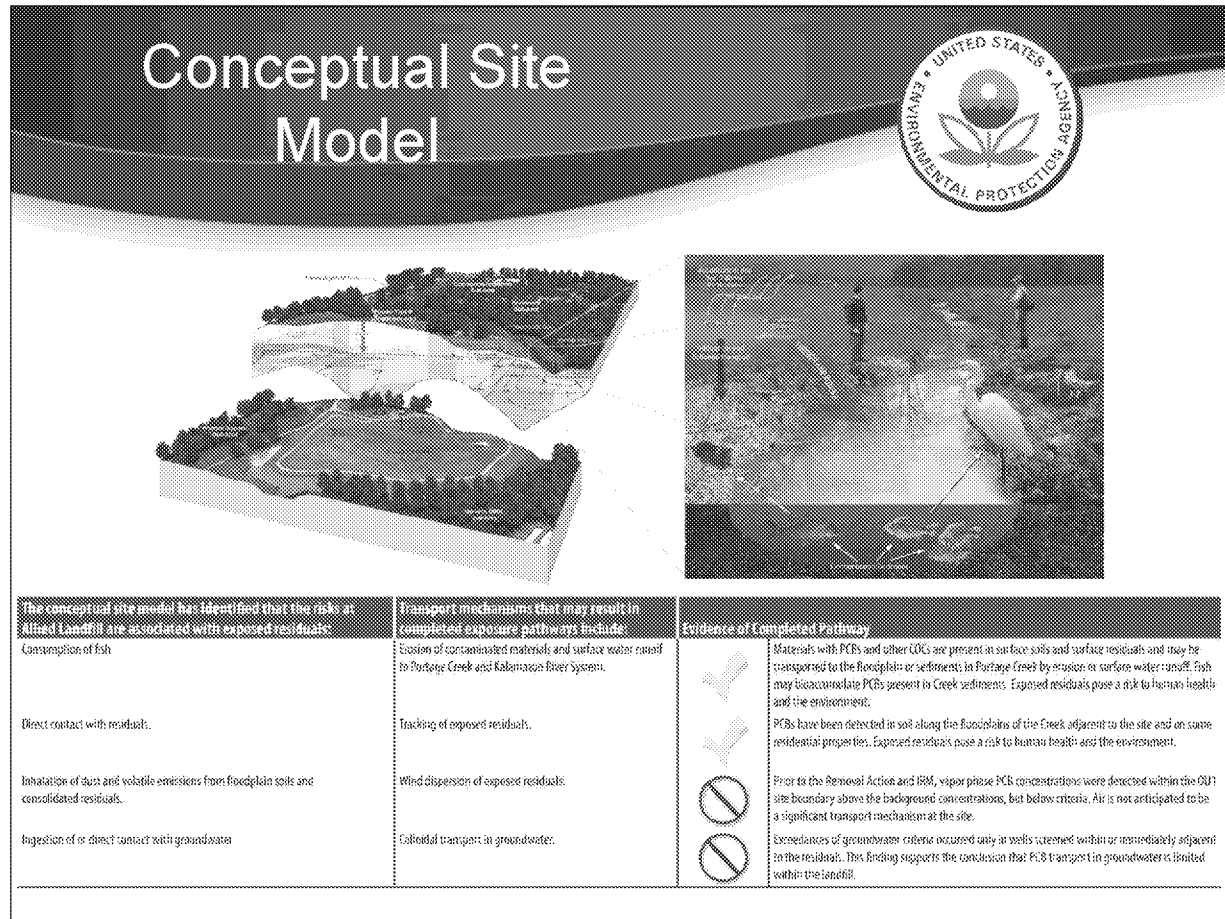
U.S. Environmental Protection Agency

# Remedial Investigation



- Completed by MDEQ in 2008
- Conceptual Site Model
  - PCBs bound to Residuals
  - Groundwater Influenced by Portage Creek
  - Risks
    - Consumption of Contaminated Fish
    - Direct Contact Exposure
    - Erosion and Runoff of Contaminated Soils and Residuals





The site risks are:

Migration of PCBs via erosion to Portage which could lead to fish uptake and then to anglers

Direct contact to and ingestion of exposed residuals

The cleanup alternatives need to prevent direct contact, prevent erosion

# Preliminary Remediation Goals



Recommended PRGs for Allied Landfill	
Media	PRG for Total PCBs
Soils	1 mg/kg (Residential) 10 mg/kg (Non-Residential) 0.5 - 0.6 mg/kg (Aquatic Ecological Receptors) 6.5 – 8.1 mg/kg (Terrestrial Ecological Receptors)
Sediment	0.33 mg/kg (Fish Consumption)
Groundwater	0.2 µg/L <sup>†</sup> (Groundwater-Surface Water Interface)
Residuals	Excavation of Visible Residuals
U.S. Environmental Protection Agency	

## Remediation Goals for Constituents Other Than PCBs



- Remediation goals for constituents other than PCBs have been developed based on Michigan R 299 criteria
  - R 299.44 Generic groundwater cleanup criteria.
  - R 299.46 Generic soil cleanup criteria for residential category.
  - R 299.48 Generic soil cleanup criteria for nonresidential category.

# Feasibility Study



- November 2013
- Addendum June 2015
  - Evaluation of Technologies
  - Array of Alternatives

U.S. Environmental Protection Agency

## Remedial Action Objectives



- **RAO 1** – Mitigate the potential for human and ecological exposure to materials at OU1 containing COC concentrations that exceed applicable risk-based cleanup criteria.
- **RAO 2** – Mitigate the potential for COC-containing materials to migrate, by erosion or surface water runoff, into Portage Creek or onto adjacent properties.
- **RAO 3** – Prevent contaminated waste material at the OU1 landfill from impacting groundwater and surface water.

Groundwater no

Surface water via erosion yes.

Prevent direct contact

Prevent erosion and migration

# Cost Summary



## Summary of Remedial Alternative Costs

*OU1 Feasibility Study Report—Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site*

Alternative	Estimated Capital Cost	Estimated O&M Cost	Estimated Periodic Cost	Total Present-worth Cost
Alternative 1	\$0	\$0	\$110,000	\$110,000
Alternative 2A	\$38,000,000	\$6,700,000	\$110,000	\$44,000,000
Alternative 2B	\$38,000,000	\$5,000,000	\$110,000	\$43,000,000
Alternative 2C	\$65,000,000	\$5,000,000	\$110,000	\$70,000,000
Alternative 2D	\$57,000,000	\$5,800,000	\$110,000	\$63,000,000
Alternative 3	\$238,000,000	\$0	\$110,000	\$238,000,000
Alternative 4	\$154,000,000	\$5,000,000	\$110,000	\$159,000,000

## NCP Threshold Criteria



**Threshold Criteria** – must be met for an alternative to be eligible.

1. **Overall protection of human health and the environment.** Is it protective? How are risks eliminated, reduced, or controlled?
2. **Compliance with ARARs.** Does it meet environmental laws or provide grounds for a waiver?

All of our alternatives in the FS meet these requirements.

They are all protective

They all legal

# NCP Balancing Criteria



**Balancing Criteria** – determines relative strengths and weaknesses among the criteria that meet threshold.

3. **Long-term effectiveness and permanence.** Does it provide reliable protection over time?
4. **Reduction of toxicity, mobility, or volume through treatment.** Does it use a treatment technology? This is preferred, if possible.
5. **Short-term effectiveness.** Will the remedy be implemented fast enough to address short-term risks, and will there be adverse effects (human health or environmental) during construction/ implementation?
6. **Implementability.** How difficult will it be to implement (e.g. availability of materials or coordination of Federal, State, and local agencies)?
7. **Cost effectiveness.** What are the estimated capital and operation and maintenance costs in comparison to other, equally-protective alternatives?

We looked at treatment.

PCBs already immobilized in the waste,

off-site incineration – added cost without added protectiveness

Cost – EPA's position set out in the Federal Register is that potential tax earnings or property value cannot not be considered as a part of the cost evaluation criteria

That said, EPA believes that there should be productive reuse of superfund sites whenever possible. EPA seeks to facilitate it. We have made some efforts here, seen in those redevelopment posters. EPA is committed to facilitating additional reuse planning.



## NCP Modifying Criteria



**Modifying Criteria** – implemented once all public comments are evaluated. They may prompt modifications to the preferred alternative to achieve the end result of a preferred alternative for cleanup in which EPA and the community can be confident.

8. **State acceptance.** Does the State agree with, oppose, or have no comment on it?
9. **Community acceptance.** Does the community support, have reservations about, or oppose it?

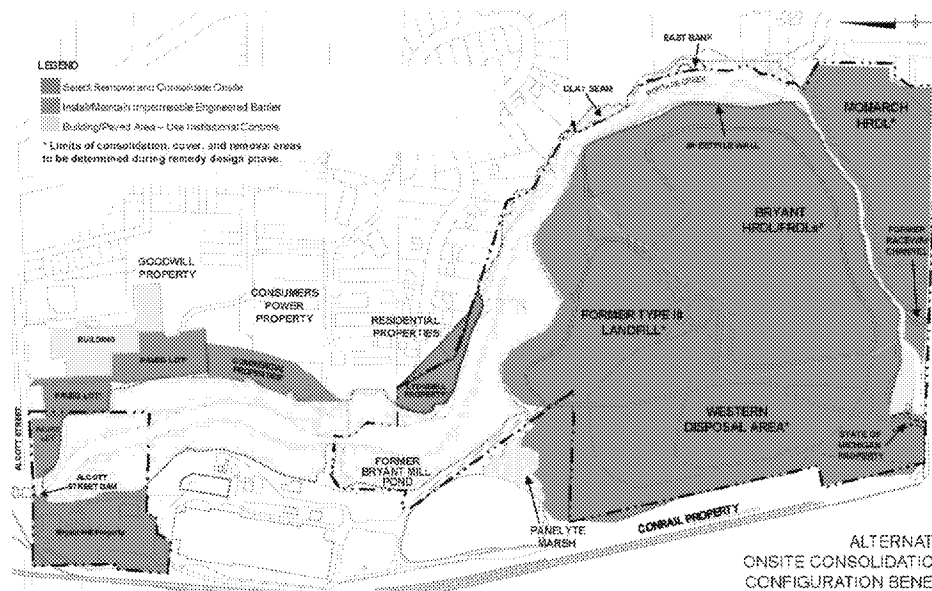
# Remedial Action Alternatives



Alternatives	Principal Components	Notes
1	No Action	Required
2A	Consolidation and Capping, LTMN	Monarch in Place
2B	Consolidation and Capping, LTMN	Monarch Consolidated
2C	Consolidation and Capping, LTMN	Monarch Consolidated Limited Incineration
2D	Consolidation and Capping, LTMN	Monarch Consolidated Smaller Landfill Footprint
3	Removal and Off-Site Disposal	Wetlands

Tradeoffs to Consider When Weighing Cleanup Options						
TRADEOFFS	CLEANUP OPTIONS					
	Alternatives 2A and 2B Consolidation and Capping	Alternative 2C Consolidation, Capping, and Treatment	Alternative 2D Consolidation, Capping with Natural Recovery	Alternative 2E Removal and Off-site Storage	Alternative 2F Removal and Off-site Storage	Alternative 2G Encapsulation/ventilation system
Area available for reuse						
Short-term impacts from construction	Fewer than 32,600 truckloads on the road	32,600 truckloads on the road	37,800 truckloads on the road	150,000 truckloads on the road	150,000 truckloads on the road	68,400 truckloads on the road
Trucks	= clean fill hauled onto site = contaminated material hauled on public roadways	2A = 22,500 truckloads 2B = 21,600 truckloads 2A and 2B = 10,000 truckloads	21,600 truckloads 11,000 truckloads	27,000 truckloads 10,000 truckloads	39,100 truckloads 110,900 truckloads	58,400 truckloads 10,000 truckloads
Impacts from truck traffic	<ul style="list-style-type: none"> <li>62 trucks per day for 2 years</li> <li>Up to 710,000 miles driven on/off site</li> </ul>	<ul style="list-style-type: none"> <li>63 trucks per day for 2 years</li> <li>750,000 miles driven on/off site</li> </ul>	<ul style="list-style-type: none"> <li>49 trucks per day for 3 years</li> <li>920,000 miles driven on/off site</li> </ul>	<ul style="list-style-type: none"> <li>115 trucks per day for 5 years</li> <li>10,000,000 miles driven on/off site</li> </ul>	<ul style="list-style-type: none"> <li>115 trucks per day for 5 years</li> <li>10,000,000 miles driven on/off site</li> </ul>	<ul style="list-style-type: none"> <li>26 trucks per day for 10 years</li> <li>3,700,000 miles driven on/off site</li> </ul>
Amount of PCB material to manage	350,000 cubic yards (2A) 479,000 cubic yards (2B) = 100,000 cubic yards	479,000 cubic yards	920,000 cubic yards	1,600,000 cubic yards	1,600,000 cubic yards	1,600,000 cubic yards
Long-term effectiveness	Effective; monitoring and maintenance needed	Effective; monitoring and maintenance needed	Effective; monitoring and maintenance needed	Effective; no monitoring and maintenance needed	Effective; no monitoring and maintenance needed	Effective; monitoring and maintenance needed but may fully encapsulated
Time to complete	2 years	2 years	3 years	5 years	5 years	10 years
Cost	\$43.44 million	\$76 million	\$63 million	\$238 million	\$238 million	\$159 million

## Alternative 2D



ALTERNATIVE 2D  
ONSITE CONSOLIDATION WITH ALTERNATE  
CONFIGURATION BENEATH IMPERMEABLE  
ENGINEERED BARRIER  
FIGURE 1

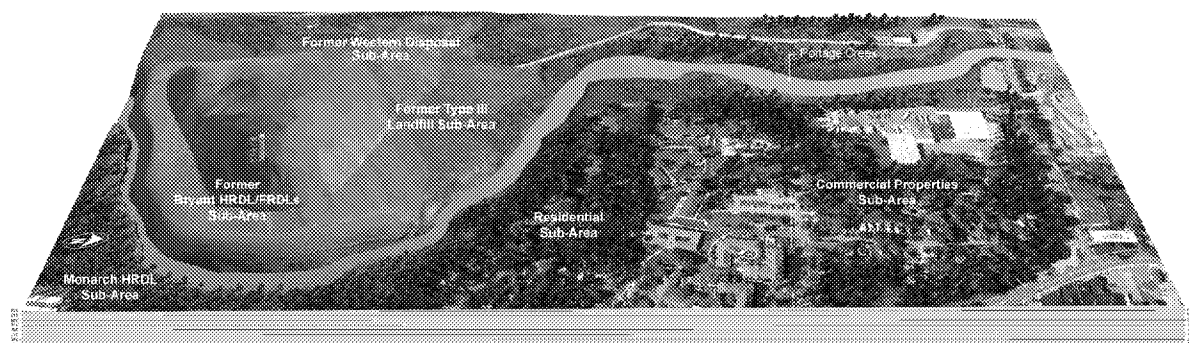
ALLIED PAPER, INC. / PORTAGE CREEK /  
KALAMAZOO RIVER SUPERFUND SITE  
ALLIED PAPER, INC. OU

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## 3-D Representation of Alternative 2D





## Questions?

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